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THE EFFECT OF INTELLIGENCE AND ACADEMIC SUCCESS ON SELF-PERCEPTIONS OF PRIMARY SCHOOL STUDENTS

Research Article

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Abstract

This study examined the relationship between intelligence levels, self-perception, and the academic achievement of fourth-grade primary school students. The study was carried out with 36 students in a state school in Istanbul, Turkey. A survey was administered with a demographic form containing the students' Turkish and Mathematics course achievement scores and personal information, the Wechsler Intelligence Scale for Children-Revised-WISC-R, and the Piers-Harris Children's Self Concept Scale. The findings indicated that neither self-perception nor the academic achievement is related to gender. Student intelligence scores were strongly related to mathematics scores and weakly related to Turkish scores. Achievement scores for Turkish and mathematics were positively associated with the information subtest scores for long-term memory in the verbal section of WISC-R. Achievement scores for the mathematics course predicted the digit symbol subtest scores (psychomotor coordination and speed) in the performance section of WISC-R. Intelligence and academic success had no significant relationship with the children's self-concepts.

Keywords: Primary education, academic achievement, intelligence, self-concept

1. Introduction

The first four years of education are the phase when the child adapts to the school and acquires basic skills. In primary school, students increase their environmental awareness, improve their literacy skills, socialize, and learn basic rules of living. In the Turkish education system, student scores in their report cards are considered the determining, maybe the most important criterion of success (Güleç & Alkış, 2003). Success is the measure or indicator of how much the individual benefited from specific courses or academic programs in the school environment. However, although academic success can be considered the average score a student achieves in courses in an academic program, it is influenced dramatically by many "non-intellectual" factors (Jamil & Khalid, 2016, Özgüven, 1998). These factors include starting school earlier or later (Küçüker, 2016), form of self-perception (Greven, Harlaar, Kovas, Chamorro-Premuzic & Plomin, 2009), social withdrawal and sense of guilt (Jamil& Khalid, 2016), familial support for the child's personality and socio-cultural development, parents' voluntary participation in school events and positive communication with their children (Şad, 2012), family socio-economic characteristics (Yelgün & Karaman, 2015), and

self-regard (Strassburger, Rosen, Miller, & Chavez, 1990; Keltikangas-Järvinen, 1992; Zuffianò, Alessandri, Gerbino, Kanacri, Di Giunta, Milioni & Caprara, 2013; Di Giunta, Alessandri, Gerbino, Kanacri, Zuffiano & Caprara, 2013; Alyami, Ullah, Alyami, Hill, & Henning, 2017).

The self can be defined as a structure comprised of perceptions, emotions, and thoughts that are the basis of personality and highly significant for a person. The self also includes a person's thoughts about themselves, self-worth, and beliefs regarding their capabilities (Kağıtçıbaşı, 1989; Keltikangas-Järvinen, 1992). Self-perception is a person's ideas about and feelings towards themselves. This is shaped by one's experiences and what one sees around oneself, and is influenced by feedback from significant others regarding one's behaviors. Based on all the feedback, observations, and experiences, a consistent and meaningful whole is formed (Pajares & Schunk, 2001). Receive both academic and social feedback is thus critical for a child's self-development (Kağıtçıbaşı, 1989; Strassburger et al., 1990).

The self-perception of young children is generally positive, which can be explained by their unrealistic positivity. In subsequent phases of life, however, such positive perception changes (Robins & Trzesniewski, 2005). As children reach cognitive maturity, they begin to evaluate themselves using feedback from their social environment. This enables them to assess their social skills and personal characteristics in a more balanced and accurate way. Once children start primary school, they may receive more negative feedback than before from their families, friends, and teachers. This may lead to more negative evaluations of their self-perception. Children with low self-esteem tend to be lonelier in adulthood, more fragile to criticism, and less tolerant of making mistakes. They usually cannot fulfill the responsibilities they take, which makes their feelings of anxiety and discomfort increase (Cevher, 2004). Studies have shown that family, school, and friends are very influential on primary school children and that such factors are critical in the formation of the self-concept (Adana, Arslantaş, & Şahbaz, 2012; Pajares & Schunk, 2001).

Children who have just started school begin to draw conclusions about themselves (Gürses & Kılavuz, 2011; Yaylacı, 2012). According to Erikson, the main virtue to obtain in this period is diligence. Children may attribute diligence or laziness to themselves by comparing themselves to their peers or from their teachers' feedback (Akbaba, 2004). Such comparisons may induce a sense of inferiority and inability as (Gürses & Kılavuz, 2011). Children's sense of achievement will increase if they are supported in their activities, work, or effort to do practical things, are allowed to complete what they start, and are praised and rewarded for the outcomes. Conversely, children may develop an inferiority complex if their parents consider their efforts to do something as "annoying" or just a "disruption" (Elkind, 1978; Yılmaz, 2013). As these children develop, they may show signs like low self-confidence and an inferiority complex in their school life, and come to doubt their abilities. This, in turn, may hinder both academic success and self-perception. Given these risks, the importance of counseling services provided in primary school is clear. Counseling activities to support academic success and the children's personal development can prevent these kinds of problems (Yeşilyaprak, 2007). Academic self-perception, which begins to be shaped during primary school, is the child's perception of their academic proficiency, a concept that can be supported through academic success and positive social relations (Shaffer, 2009). The age of 9 is accepted as the period when childhood ends and adolescence begins. This age group can transform their cognitive potential into academic performance (Shaffer, 2009; Batra, 2013; Stoeger, Steinbach, Obergriesser, & Matthes, 2014, Yavuzer, 2016). Primary school children are considered to have unstable motivation levels and still-formable learning skills. According to Ahmad, Anwar, Anwar, and Bareech (2014), intelligence and success are inseparable. They argue that there is a relationship between intelligence and academic success in that intelligence predicts

academic success but academic success does not predict intelligence (Watkins, Lei, & Canivez, 2007).

Assessing and supporting the intelligence potential of children can help interventions to meet children's developmental needs. Providing the supportive education that children need and that may improve their academic success is an integral part of educational counseling activities. In Turkey, primary school students are expected to use Turkish actively and adequately, to enjoy reading and learning, and to have basic mathematical and verbal literacy skills (Akınoğlu, 2005). Learning Turkish improves not only listening, speaking, reading, and writing but also mental skills such as thinking, understanding, sorting, categorizing, questioning, relating, criticizing, analyzing-synthesizing, and evaluating across texts. It also improves higher-level skills like communication, conscious decision making, and maintaining learning (Şahin, 2007; Durukan, 2015). Mathematics enhances problem-solving, reasoning, establishing relations between different disciplines, logical induction and deduction, as well as being systematic, attentive, patient, and responsible. It also includes basic knowledge and skills necessary for accurately perceiving natural phenomena and developments, and apprehending relationships and gaining control over them. In short, mathematics is a key part of the primary school curriculum (Orbeyi & Güven, 2008).

Because Turkish and mathematics courses strengthen comprehension and basic arithmetic skills, they can positively influence the primary school students' cognitive development and academic success (Ersoy, 2006) as well as their self-concept (Göktaş, 2008; Altun & Yazıcı, 2013; Sarıer, 2016). This study analyzes the relationships between the total Turkish and mathematics course scores of Turkish fourth-grade primary school students (9-year-old age group), their intelligence level, measured by the Wechsler Intelligence Scale for Children and its sub-scales, and their self-perception, measured by the Piers-Harris Children's Self Concept Scale.

The study seeks to answer the following research questions:

1- Is there a sex difference in academic success (Turkish and mathematics grades), intelligence (WISC-R scores), and self-regard (self-concept) scores?

2- Are there significant correlations between academic success (Turkish and mathematics grades), intelligence (WISC-R scores), and self-regard (self-concept)?

3- Does intelligence (WISC-R scores) have a significant effect on academic success (Turkish and mathematics grades)?

4- Do intelligence (WISC-R scores) and academic success (Turkish and mathematics grades) have a significant effect on self-regard (self-concept)?

2. Method

2.1. Research Model

This research employed the relational research method, which analyzes the relationship between two or more variables without intervening in the variables (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2008). This study first analyzed the relationship between the Turkish and Mathematics grades of 4th graders as indicators of academic success, their WISC-R scores, and self-concept scores. It then assessed find whether intelligence explained academic success and whether academic success and intelligence explained the self-concept in the children studied.

2.2. Study Group

The research was conducted during the 2016-2017 academic year with 34 fourth-grade students attending a state school in Istanbul, Turkey. Data from one student was excluded for disrupting multidimensional normality, leaving 33 students for further analysis – 15 (45.5%) female and 18 (54.5%) male. The mean age was 9.28 years. The students' Turkish grades were average for the school ($\bar{x}$ = 56.39) whereas their mathematics scores were below average ($\bar{x}$ =52.38). The Piers-Harris Self-Concept Scale scores indicated that the students had an average self-concept ($\bar{x}$ =58.79). Mean scores for verbal ($\bar{x}$ =87.03), performance ($\bar{x}$ =97.67), and full-scale intelligence ($\bar{x}$ =91.64) indicate that the students were of a normal intelligence level.

2.3. Instrument

Demographic Form: This recorded the students' Turkish and Mathematics course grades (average exam scores), and their age and sex.

Wechsler Intelligence Scale for Children-Revised-WISC-R: Developed by Wechsler in 1949, this test can be applied to children between 6 and16 years old. The test consists of two sub-sections, verbal and performance, and 12 sub-tests of the two main sub-sections. The verbal section sub-tests are general knowledge, arithmetic, vocabulary, comprehension, and digit span while the performance section sub-tests are picture completion, picture arrangement, block design, object assembly, coding, and labyrinths. Savaşır & Şahin (1995) developed the first Turkish adaptation of the scale and tested its validity and reliability. The reliability scores for the test in Turkey were.97 for total, .97 for the verbal section, and .93 for the performance section.

Piers-Harris Children's Self-Concept Scale (PHCSCS): This 80-item scale was developed by Piers and Harris in 1964 to measure students' self-concept for the age group 9-16 years. The scale assesses children's emotions, thoughts, and attitudes related to themselves (their selves). Students answer "yes" or "no" to each question to yield a score between 0 and 80. Higher scores indicate that an individual has developed positive emotions and thoughts about themselves whereas lower scores indicate negative emotions and thoughts. The questionnaire can be administered individually or in groups, although group administration requires at least third-grade level literacy skills. Çataklı & Öner (1986) developed the Turkish version of the scale and conducted validity and reliability tests. The reliability scores ranged between .81 and .89 (Öner, 1994). The construct validity was assessed using the test anxiety inventory. The two scales correlated significantly at .01 level.

2.4. Procedure

From 4th graders in a public school in Istanbul, 34 students were selected who had received a score below 50 their Turkish and/or mathematics course. After the parents of the selected students had given their consent, the relevant student details were collected from parents and teachers. The WISC-R tests, which were administered by specialists, took approximately 90 minutes for each student. The Piers-Harris Children's Self-Concept Scale was administered with the assistance of the school's psychological counselor during class hours. This scale took up to 10 minutes to complete. For students with lower academic success, the school counselor informed their parents and directed students to the counseling and research center if deemed necessary.

2.5. Data Analysis

Multivariate regression analysis was used to explain the relationship between the independent and dependent variables. Several procedures were conducted before the analysis to meet the assumptions of multivariate regression analysis. First, the missing values were identified for each variable (Çokluk, Şekercioğlu & Büyüköztürk, 2014). However, no data was missing in this case. Kolmogorov-Smirnov and Shapiro-Wilk analyses were conducted to test the normality of the distributions. These indicated that the distributions were not significantly different from the normal distribution curve ($p>.05$). Scatter plots were used to assess linearity. Horizontal and vertical skewness values were assessed and the skewness and kurtosis values for all distributions varied between -1 and +1. To determine multicollinearity, Tolerance, and VIF (Variance Inflation Factor) values were evaluated. The tolerance value was smaller than 1 while the VIF value was less than 10. These values indicated there was no multicollinearity problem (Çokluk, 2010). Mahalanobis distances were analyzed to determine multivariate extreme values. One observation with an extreme value that caused multicollinearity was excluded from the analysis. Subsequent analyses were conducted on 33 participants. All these operations, and the following Pearson Product-Moment Analysis, Mann-Whitney U, Rank Difference Analysis, and stepwise multivariate regression analysis were conducted using SPSS 21.0 software.

3. Results

This section is presented in the same order as the purposes section above. The first research question was, Is there a sex difference in academic success (Turkish and mathematics grades), intelligence (WISC-R scores), and self-regard (self-concept) scores? Table 1 shows the analyses conducted to answer this question.

Table 1. Results of the Mann Whitney-U Analysis Conducted to Establish whether the Variables Vary Based on the Sex Variable

	Sex	**N**	$\overline{X}_{sira}$	$\sum_{sira}$	**U**	**Z**	**p**
Turkish	Girl	15	17.8	267	123	-0.434	0.664
	Boy	18	16.33	294			
Mathematics	Girl	15	17.33	260	130	-0.181	0.857
	Boy	18	16.72	301			
Self-concept	Girl	15	16.6	249	129	-0.217	0.828
	Boy	18	17.33	312			
General Knowledge	Girl	15	15.23	228.5	108.5	-0.979	0.327
	Boy	18	18.47	332.5			
Similarities	Girl	15	15.17	227.5	107.5	-1.005	0.315
	Boy	18	18.53	333.5			

Arithmetic	Girl	15	16.23	243.5	123.5	-0.42	0.674
	Boy	18	17.64	317.5			
Comprehension	Girl	15	14.53	218	98	-1.346	0.178
	Boy	18	19.06	343			
Digit Span	Girl	15	13.73	206	86	-1.8	0.072
	Boy	18	19.72	355			
Verbal IQ	Girl	15	14.2	213	93	-1.521	0.128
	Boy	18	19.33	348			
Picture Completion	Girl	15	16.6	249	129	-0.219	0.826
	Boy	18	17.33	312			
Picture Arrangement	Girl	15	16.47	247	127	-0.293	0.769
	Boy	18	17.44	314			
Block Design	Girl	15	18.7	280.5	109.5	-0.929	0.353
	Boy	18	15.58	280.5			
Object Assembly	Girl	15	18.1	271.5	118.5	-0.601	0.548
	Boy	18	16.08	289.5			
Coding	Girl	15	17.77	266.5	123.5	-0.42	0.675
	Boy	18	16.36	294.5			
Performance IQ	Girl	15	17.87	268	122	-0.471	0.638
	Boy	18	16.28	293			
Full-scale IQ	Girl	15	15.73	236	116	-0.688	0.492
	Boy	18	18.06	325			

As seen from Table 1, the Mann-Whitney U analysis indicates there was no significant variation in any of the variables based on sex ($p>.05$). Thus, sex was not significantly correlated with academic success in this sample.

The second research question was, Is the correlation between academic success (Turkish and mathematics grades), intelligence (WISC-R scores), and self-regard (self-concept) significant? Table 2 shows the analyses conducted to answer this question.

Table 2. Correlations between WISC-R scores, Self-concept, and Turkish and Mathematics Grades

		Turkish	Mathematics	General Knowledge	Comprehension	Verbal IQ	Coding	Full-scale IQ
Turkish	r	1	.802**	.479**	0.283	0.294	0.29	0.256
Mathematics	r	.802**	1	.589**	.351*	.452**	.436*	.471**
Self	r	0.178	0.307	0.250	0.202	0.100	0.097	0.117

* p<.05, ** p<.001

As shown in Table 2, the results of the Pearson Product-Moment analysis indicate a highly significant positive correlation between Turkish and Mathematics grades (r=.802; p<.001) and a significant positive correlation between Turkish grades and the WISC-R General Knowledge sub-section (r=0.479; p<.001). However, no significant correlation was found between Turkish grades and scores for Similarities (r=0.242; p>.05), Arithmetic (r=0.052; p>.05), Comprehension (r=0.283; p>.05), Digit Span (r=-0.055; p>.05), Verbal IQ (r=0.294; p>.05), Picture Completion (r=-0.256; p>.05), Picture Arrangement (r=0.051; p>.05), Block Design (r=0.117; p>.05), Object Assembly (r=0.200; p>.05), Coding (r=0.290; p>.05); Performance IQ (r=0.113; p>.05), and Full-scale IQ (r=0.256; p>.05).

There were significant positive correlations between mathematics grades and WISC-R sub-section scores for General Knowledge (r=.479; p<.001), Comprehension (r=0.283; p<.001), Verbal IQ (r=0.294; p<.001), Coding (r=0.29; p<.001), and Full-scale IQ (r=0.256; p<.001). However, there was no significant correlation between Turkish grades and Similarities (r=0.262; p>.05), Arithmetic (r=0.299; p>.05), Digit Span (r=0.83; p>.05), Picture Completion (r=-0.025; p>.05), Picture Arrangement (r=0.113; p>.05), Block Design (r=0.294; p>.05), Object Assembly (r=0.183; p>.05), or Performance IQ (r=0.306; p>.05).

No significant correlations were found between Self-concept and Turkish grades (r=0.178; p>.05), Mathematics grades (r=0.307; p>.05), General Knowledge (r=0.250; p>.05), Similarities (r=-0.052; p>.05), Arithmetic (r=0.168; p>.05), Comprehension (r=0.202; p>.05), Digit Span (r=-0.308; p>.05), Verbal IQ (r=0.100; p>.05), Picture Completion (r=0.104; p>.05), Picture Arrangement (r=-0.056; p>.05), Block Design (r=0.229; p>.05), Object Assembly (r=-0.051; p>.05), Coding (r=-0.097; p>.05), Performance IQ (r=0.067; p>.05), or Full-scale IQ (r=0.117; p>.05).

The third research question was, Is the effect of intelligence (WISC-R scores) on academic success (Turkish and mathematics grades) significant? Tables 3, 4, and 5 show the analyses conducted to answer this question.

Table 3. The Relationship of WISC-R Verbal Sub-sections to Turkish grades

Model	Variables	ß	Unstandardized Error	Standardized ß	t	p
Step 1	**Constant**	35.745	7.078		5.05	0.000
	General Knowledge	3.724	1.225	0.479	3.039	0.005

F = 9.235; p<.05, R = .479; R^2 = .230

Table 3 shows the results of the stepwise regression analysis conducted to find whether the effects on Turkish grades of WISC-R verbal sub-dimensions (General Knowledge,

Similarities, Arithmetic, Comprehension, and Digit Span) are significant. The analysis of variance result (F= 9.235; p<.05) shows that the General Knowledge score significantly explains the variance in Turkish grades. General Knowledge scores explained 23% of the variance in Turkish grades (R^2= .230; p<0.001). The standardized ß coefficient indicates that a 1-unit increase in General Knowledge scores increases Turkish grades by 0.479 points.

The result of the multiple regression analysis conducted to determine whether the effect on Turkish grades of WISC-R performance sub-dimensions (Picture Completion, Picture Arrangement, Block Design, Object Assembly, and Coding) was not significant (F=1.122; p>.05).

Table 4. The Effect of WISC-R Verbal Sub-dimensions on Mathematics grades

Model	Variables	ß	Unstandardized Error	Standardized ß	t	p
Step 1	Constant	28.720	6.078		4.725	0.000
	General Knowledge	4.267	1.052	0.589	4.055	0.000
F= 16.44; p<.0.00, R= .589; R^2= .347						

Table 4 shows the results of the stepwise regression analysis conducted to find whether the effects on mathematics grades of WISC-R Verbal Sub-dimensions (General Knowledge, Similarities, Arithmetic, Comprehension, and Digit Span) were significant. The analysis of variance result (F= 16.44; p<.0.001) shows that General Knowledge scores significantly explain the variance in mathematics grades. That is, General Knowledge scores explain 34.7% of the variance in mathematics grades (R^2= .347; p<0.001). The standardized ß coefficient indicates that a 1-unit increase in General Knowledge scores increases mathematics grades by 0.589 points.

Table 5. The Effect of WISC-R Performance Sub-dimensions on Mathematics grades

Model	Variables	ß	Unstandardized Error	Standardized ß	t	p
Step 1	Constant	8.078	6.078		.489	0.000
	Coding	13.674	1.052	0.436	2.699	0.011
F= 7.282; p<.05, R= .436; R^2= .190						

Table 5 shows the results of the stepwise regression analysis conducted to find whether the effects on mathematics grades of WISC-R performance sub-dimensions (Picture Completion, Picture Arrangement, Block Design, Object Assembly, and Coding) were significant. The analysis of variance result (F= 7.282; p<.05) shows that only Coding scores significantly explained the variance in mathematics grades. Coding scores explained 19% of the variance in mathematics grades (R^2= .190; p<0.001). The standardized ß coefficient indicates that a 1-unit increase in Coding scores increases mathematics grades by 0.436 points.

The fourth research question was, Is the effect of intelligence (WISC-R scores) and academic success (Turkish and mathematics grades) on self-regard (self-concept) significant? The multiple regression analysis results indicated that Turkish and mathematics grades have no significant effect on self-concept (F=1.798; p>.05). Verbal, performance, and full-scale IQ scores also had no significant effect on self-concept (F=.605; p>.05).

4. Discussion

The study's findings indicate that there is no correlation between gender, and self-perception or academic success among the fourth-grade students sampled here. Intelligence scores were highly correlated with mathematics grades but weakly correlated with Turkish grades. However, neither of these scores were significantly correlated with self-concept. Turkish and mathematics scores predicted the general knowledge sub-test scores of the WISC-R verbal section, which operationalizes long-term memory, while mathematics course scores predicted the coding sub-test (psycho-motor coordination and speed) of the performance section. Intelligence and academic success had no significant effect on the children's self-concept.

Like most previous studies, this study also found that self-perception and intelligence scores do not differ by sex. Akuysal-Aydoğan and Deniz (2012) found that self-esteem levels of primary school phase II students do not vary by sex. Çakmak, Şahin, and Demirbaş (2017), and Seçer, İlbay, Ay and Çiftçi (2012) also found that self-esteem does not vary by sex for primary school students. Kanay (2006) found no sex differences in the self-concept of children aged 9-13 years diagnosed with ADHD. Some studies on primary school students have, however, found that self-esteem levels of schoolgirls were higher than those of schoolboys (Kılıç-Duran, 2007; Yılmaz, Yiğit, & Yurt, 2012; Çelik, 2011; Yılmaz, Yiğit, & Kaşarcı, 2012; Göktaş, 2008).

Cornwell, Mustard and Van Parys (2013) analyzed whether girls and boys of different racial categories (white, black, and Spanish) differ in the language (reading), mathematics, and science scores. They found no difference in terms of the exam scores. However, although the boys' in-class performance was as good as that of girls, teachers evaluated boys less favorably; the girls' supposedly better in-class behavior positively influenced teachers' grading of girls. From a meta-analysis of 15,042 published articles, Voyer and Voyer (2014) concluded that schoolgirls' language scores but not mathematic scores were significantly better than those of schoolboys. From an international meta-analysis, Else-Quest, Hyde, and Linn (2010) found no significant difference in academic success between girls and boys. Lavy and Schlosser (2007) found that primary school academic success, independent of sex, was influenced by friendships and relations with the teacher. Göktaş (2008), and Erkman, Caner, Sart, Börkan, and Şahan (2010) established that the more students thought that their class teacher loved them, the higher were their academic self-esteem and success. From a longitudinal study of 17,565 students from 994 schools, Husain and Millimet (2009) concluded that, until the 4th grade, schoolboys were more successful in mathematics and schoolgirls in language courses. After 4th grade, however, these sex differences disappear.

Kaya and Oğurlu (2015) analyzed the relationship between self-esteem, and intelligence and academic success in 127 adolescent students. Whereas there was a highly significant correlation between intelligence and academic success, the correlation between self-esteem and academic success was not significant. Watkins and friends (2007) argue that there is a relation between intelligence and academic success in that intelligence affects academic success whereas academic success does not influence intelligence. Yücel and Koç (2011) found that a positive attitude towards mathematics courses predicted 16% of the variance in academic success for both schoolgirls and schoolboys. The regression model showed that one-unit increase in attitude scores predicted a .07-point increase in mathematics grades (in a 5-point grading system).

In the present study, intelligence and academic success had no significant effect on children's self-perception. In contrast, many previous studies have reported a significant positive correlation between the academic success and self-esteem of primary school students (Yılmaz, Yiğit, & Yurt, 2012; Yılmaz, Yiğit, & Kaşarcı, 2012; Göktaş, 2008; Pajares, Britner

& Valiante, 2000; Rahmani, 2011; Hay, Ashman & Van Kaayenoord, 1998; Harper & Purkey, 1993; Hoge & Renzulli; 1993; Guay, Marsh & Boivin, 2003; Cvencek, Kapur & Meltzoff, 2015). Studying junior boarding school students, Seçer et al. (2012) found that students with higher academic success had significantly higher levels of self-esteem than students with average and lower academic success levels. From a meta-analysis of 62 studies conducted in Turkey between 2000 and 2015, Sarıer (2016) concluded that the critical factors influencing students' academic success are socio-economic conditions, self-efficacy, and motivation. Pullmann and Allik (2008) found that academic self-esteem was a crucial predictor of academic success in 4,572 primary students.

After analyzing the results of this study, we can conclude that sex has no significant effect on intelligence level, academic success, and self-perception in the primary school students sampled here. This finding particularly helps in evaluating nine-year-old fourth-grade students and planning educational and personal guidance services, ranging from organizing in-class activities to friendship building. This preadolescent age group could participate in both individual and group guidance activities and easily support each other.

Other noteworthy findings are that long-term memory and verbal intelligence scores correlated with success in Turkish and mathematics while sub-test scores for comprehension and coordination speed correlated with success in mathematics. When interpreting the tests for parents and guidance centers, psychometrists assessing children's intelligence potentials can capitalize on these findings, keeping in mind that memory, reasoning, and verbal intelligence scores are correlated with academic success. Further research to evaluate the correlations between performance-assessment tests and success in various courses can guide those who work in this area. This study's findings indicate that preparation for courses like mathematics and Turkish should be reviewed regarding the preparation of the Turkish high school entrance exam. Individual education programs can be prepared, and the students' academic success can be supported according to the characteristics of the children. The lack of a significant relationship between self-perception and academic achievement in this study contradicts the findings from many previous studies (Yılmaz, Yiğit, & Yurt, 2012; Yılmaz, Yiğit, & Kaşarcı, 2012; Göktaş, 2008; Pajares, Britner & Valiante, 2000; Rahmani, 2011; Hay, Ashman & Van Kaayenoord, 1998; Harper & Purkey, 1993; Hoge & Renzulli; 1993; Guay, Marsh & Boivin, 2003; Cvencek, Kapur & Meltzoff, 2015) It can be concluded that the appropriate interventions to support children's academic achievement can benefit more from education and develop a psychologically more resistant structure. This study only used data taken from primary school 4th graders. Diversification of the findings with data from students of different age groups would enable children who are developing typically or atypically to be properly evaluated and their academic success predicted more accurately.

This study also found that intelligence and academic success have no significant influence on self-perception, which contradicts previous research findings. This result may be explained by the size and age of the sample. Therefore, the result should be reevaluated with larger samples of students from the same age group. Another possible explanation for the finding is that children in this preadolescent age group focus more on their friendships, and do not yet feel the pressures of challenging exams, such as the high school entrance examinations, or their parents' expectations. The finding may, therefore, be useful in evaluating nine-year-old schoolgirls and schoolboys. It can also help teachers in commenting about and motivating 3rd and 4th graders when meeting with their parents and for performing in-school guidance services.

References

Adana, F., Arslantaş, H., & Şahbaz, M. (2012). Lise öğrencilerinin benlik kavramlarını algılama biçimleri ve ilişkili faktörler. [The Perception Forms of Self-concepts of High-school Students and Related Factors] *Psikiyatri Hemşireliği Dergisi [Journal of Psychiatric Nursing]*, *3*(1), 22-29.

Ahmad, J., Anwar, M., Anwar, A., & Bareech, K. (2014). A co-relational study of ıntelligence and academic achievement of students from government schools of Peshawar district. *Putaj Humanities & Social Sciences*, *21*(2), 107-115.

Akbaba, S. (2004). Çocuk eğitimcileri ve sağlıklı psikolojik gelişim [Child educators and healthy psychological development]. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* [Ataturk University Journal of Graduate School of Social Science], *4*(2), 73-92.

Akınoğlu, O. (2005). Türkiye'de uygulanan ve değişen eğitim programlarının psikolojik temelleri [The psychological basis of applied and changed education programs in Turkey], *Marmara Üniversitesi Atatürk Eğitim Fakültesi Dergisi* [Marmara University Journal of Educational Sciences], *22*, 31-46.

Akuysal-Aydoğan, S. & Deniz, M., E., (2012). Son çocukluk döneminde benlik saygısı ve umut. [Self-esteem and hope in late childhood period]. *Adnan Menderes Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Dergisi [Adnan Menderes University Journal of Educational Science], 3* (2), 97-106.

Altun, F. & Yazıcı, H.(2013). Ergenlerin benlik algılarının yordayıcıları olarak akademik öz-yeterlik inancı ve akademik başarı. [Academic self-efficacy beliefs and academic achievement as predictors of adolescents' self-perception]. *Kastamonu Eğitim Dergisi [Kastamonu Education Journal]*, *21*(1), 145-156.

Alyami, M., Ullah, E., Alyami, H., Hill, A., & Henning, M. (2017). The impact of self-esteem, academic self-efficacy and perceived stress on academic performance: A Cross-sectional study of saudi psychology students. *European Journal of Educational Sciences (EJES), 51;*51-68.

Batra, S. (2013). The psychosocial development of children: implications for education and society—Erik Erikson in context. *Contemporary Education Dialogue, 10(2),* 249-278.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö.E., Karadeniz, Ş. & Demirel, F. (2008). *Bilimsel araştırma yöntemleri*. [Scientific research methods]. Ankara: Pegem Yayınları.

Cevher, F. N. (2004). *Okul öncesi eğitim kurumlarına devam eden 5-6 yaş çocuklarının öğretmen algısına göre akademik benlik saygısı düzeyinin bazı değişkenler açısından incelenmesi* [Examining the level of academic self-esteem according to the teacher perception of the children of 5-6 years old who are going to pre-school education institutions in terms of some variables] Yayınlanmamış Doktora Tezi [Unpublished Doctoral Dissertation]. Pamukkale University, Social Science, Turkey. Retrieved from: https://tez.yok.gov.tr/UlusalTezMerkezi/

Cornwell, C., Mustard, D. B., & Van Parys, J. (2013). Noncognitive skills and the gender disparities in test scores and teacher assessments: Evidence from primary school. *Journal of Human Resources*, *48*(1), 236-264.

Cvencek, D., Kapur, M., & Meltzoff, A. N. (2015). Math achievement, stereotypes, and math self-concepts among elementary-school students in Singapore. *Learning and Instruction*, *39*, 1-10.

Çakmak, A., Şahin, H., & Demirbaş, E. A. (2017) 7. ve 8. sınıf ortaokul öğrencilerinin sınav kaygısı ve benlik saygısı arasındaki ilişkinin incelenmesi [The analysis of relationship between test anxiety and self-esteem in the case of 7th and 8th grade students], *E-Kafkas Eğitim Araştırmaları Dergisi*, [E-Kafkas Journal of Educational Research], *4* (2), 1-9.

Çelik, S. (2011). *Öğretmen tutumları ile ilköğretim 5. sınıf öğrencilerinin benlik saygısı düzeyleri arasındaki ilişki*. [Relationship between perceived teacher attitude and 5th grade primary students' level of self-concept]. Yayınlanmamış Yüksek Lisans Tezi [Unpublished Master Thesis]. Selçuk University, Educational Science, Turkey. Retrieved from: http://acikerisim.selcuk.edu.tr:8080/xmlui/bitstream/handle/123456789/1955/294159.pdf?sequence=1

Çokluk, Ö. (2010). Lojistik regresyon analizi: Kavram ve uygulama. [Logistic Regression: Concept and Application] *Kuram ve Uygulamada Eğitim Bilimleri* [Educational Sciences: Theory & Practice], *10* (3), 1357-1407.

Çokluk, Ö., Şekercioğlu, G. & Büyüköztürk, Ş. (2014). *Sosyal bilimler için çok değişkenli istatistik SPSS ve LISREL uygulamaları*. [Multivariate tatistics for social science, SPSS and LISREL practices]. Ankara: Pegem Akademi.

Durukan, E. (2015). Öğretmen görüşleri açısından Türkçe dersi öğretim programı kazanımları [Teachers' views about acquisitions in Turkish lesson curriculum], Karadeniz Sosyal Bilimler Dergisi [Karadeniz Journal of Social Sciences], *5 (*8), 1-14.

Di Giunta, L., Alessandri, G., Gerbino, M., Kanacri, P. L., Zuffiano, A., & Caprara, G. V. (2013). The determinants of scholastic achievement: The contribution of personality traits, self-esteem, and academic self-efficacy. *Learning and individual Differences*, *27*, 102-108.

Elkind, D. (1979). Erik Erikson: İnsanda gelişimin sekiz evresi. [Erik Erikson's Eight Ages of Man,]. A. Dönmez (çev.). *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi* [Ankara University Journal of Faculty of Educational Science], *12*(1), 27-39.

Else-Quest, N. M., Hyde, J. S., & Linn, M. C. (2010). Cross-national patterns of gender differences in mathematics: a meta-analysis, Psychological Bulletin), *136*(2), 103-127.

Erkman, F., Caner, A., Hande Sart, Z., Börkan, B., & Şahan, K. (2010). Influence of perceived teacher acceptance, self-concept, and school attitude on the academic achievement of school-age children in Turkey. *Cross-Cultural Research*, *44*(3), 295-309.

Ersoy, Y. (2006). İlköğretim matematik öğretim programındaki yenilikler-1: Amaç, içerik ve kazanımlar [Innovations in mathematics curricula of elementary schools-ı: Objective, content and acquisition], *İlköğretim Online* [Elementary Education Online], 5 (1), 30-44.

Göktaş, M. (2008). *İlköğretim beşinci sınıf öğrencilerinin akademik benlik saygısı düzeyleri ile ders başarıları arasındaki ilişki* [The relationship between the fifth graders' academic self-esteem level and their achievement]. Yayınlanmamış Yüksek Lisans Tezi [Unpublished Master Thesis]. Dokuz Eylül University, Educational Science, Turkey. Retrieved from:

http://dspace.deu.edu.tr/xmlui/bitstream/handle/12345/7329/220324.pdf?sequence=1&isAllowed=y

Greven, C. U., Harlaar, N., Kovas, Y., Chamorro-Premuzic, T., & Plomin, R. (2009). More than just IQ: School achievement is predicted by self-perceived abilities—but for genetic rather than environmental reasons. *Psychological Science*, *20*(6), 753-762.

Guay, F., Marsh, H. W., & Boivin, M. (2003). Academic self-concept and academic achievement: Developmental perspectives on their causal ordering. *Journal of Educational Psychology, 95*(1), 124-136.

Güleç, S. & Alkış, S. (2003). İlköğretim birinci kademe öğrencilerinin derslerdeki başarı düzeylerinin birbiriyle ilişkisi. [Relations among primary school students' course performances] *İlköğretim-Online*, [Elementary-Online] *2* (2), 2003 sf. 19-27.

Gürses, İ., & Kılavuz, A. (2011). Erikson'un psiko-sosyal gelişim dönemleri teorisi açısından kuşaklararası din eğitimi ve iletişiminin önemi. [The importance of intergenerational religious education and communication in terms of psychological developmental stages theory of Erikson]. *Uludağ Üniversitesi İlahiyat Fakültesi Dergisi [Uludağ University Journal of Faculty of Theology], 20*(2), 153-166.

Harper, K., & Purkey, W. W. (1993). Self-concept-as-learner of middle level students. *Research in Middle Level Education, 17*, 80-89.

Hay, J., Ashman, F. A., & Van Kraayenoord, E. C. (1998). Educational characteristics of students with high or low self-concept. *Psychology in the Schools, 35*, 391-400.

Hoge, R. D., & Renzulli, J. S. (1993). Exploring the link between giftedness and self-concept. *Review of Educational Research*, *63*(4), 449-465.

Husain, M., & Millimet, D. L. (2009). The mythical 'boy crisis'?. *Economics of Education Review*, *28*(1), 38-48.

Jamil, F., & Khalid, R. (2016). Predictors of academic achievement in primary school students. *Pakistan Journal of Psychological Research*, 31(1), 45-61.

Kağıtçıbaşı, Ç. (1989). *Aile–içi etkileşim ve çocuk gelişimi. Türkiye'de çocuğun durumu*. [Inter-family interaction and child development: The child's situation in Turkey] Ankara: TC Başbakanlık Devlet Planlama Teşkilatı Sosyal Planlama Başkanlığı ve Unicef Yayını, 195-209.

Kanay, A. (2006). *Dikkat eksikliği hiperaktivite bozukluğu olan 9-13 yaş grubu ilköğretim öğrencilerinin uyumsal davranışları, benlik kavramı ve akademik başarıları arasındaki ilişkiler*. [The relations between adaptive behaviors, self concept and academic achievements of elementary school students aged between 9 -13 years old with attention deficit hyperactivity disorder]. Yayınlanmamış Yüksek Lisans Tezi [Unpublished Master Thesis]. Dokuz Eylül University, Educational Sciences, Turkey. Retrieved from: http://acikerisim.deu.edu.tr/xmlui/bitstream/handle/12345/7461/189821.pdf?sequence=1&isAllowed=y

Kaya, F., & Oğurlu, Ü. (2015). Benlik saygısı, zekâ ve akademik başarı ilişkisi [The relationship among self-esteem, intelligence, and academic achievement]. *Journal of Human Sciences*, *12*(1), 951-965.

Keltikangas-Järvinen,L. (1992). Self-esteem as a predictor of future school achievement. *European Journal of Psychology of Education*, 7(2), 123-130.

Kılıç-Duran, Ş. (2007). *9, 10, 11 yaşındaki çocukların zihinsel gelişim ve benlik saygısına ailenin sosyo-ekonomik düzeyinin etkisi.* [The social-economic level of the nine,ten,eleven year-old children's families how to effect their mental improvement and self respect] Yayınlanmamış Yüksek Lisans Tezi [Unpublished Master Thesis]. Maltepe University, Social Sciences, Turkey. Retrieved from: https://tez.yok.gov.tr/UlusalTezMerkezi/

Küçüker, E. (2016). A comparison of the academic achievements of students with different primary school entrance age. *Education*, *137*(1), 46-58.

Lavy, V., & Schlosser, A. (2007). *Mechanisms and impacts of gender peer effects at school* (No: 13292). National Bureau of Economic Research.

Orbeyi, S. & Güven, B. (2008). Yeni ilköğretim matematik dersi öğretim programının değerlendirme öğesine ilişkin öğretmen görüşleri [Teachers' perceptions related to the evaluation component of the education program of primary school education mathematics studies], *Eğitimde Kuram ve Uygulama* [Journal of Theory and Practice in Education], *4* (1), 133-147.

Öner, N. (1994). *Piers-Harris'in çocuklarda öz-kavramı ölçeği el kitabı*. [Handbook of Self-esteem Scale for Children devoloped by Piers-Harris]. Ankara: Türk Psikologlar Derneği.

Özgüven, İ. E. (1998). *Bireyi tanıma teknikleri* [Individual identification techniques], Ankara: PDREM Yayınları.

Pajares, F. & Schunk, D. H. (2001): Self-beliefs and school success: Self-efficacy, self-concept, and school achievement. In R. Riding ve S. Rayner (Eds.), *Selfperception* (pp. 239-266). London: Ablex Publishing.

Pajares, F., Britner, S. L., & Valiante, G. (2000). Relation between achievement goals and self-beliefs of middle school students in writing and science. *Contemporary Educational Psychology*, *25*(4), 406-422.

Pullmann, H., & Allik, J. (2008). Relations of academic and general self-esteem to school achievement. *Personality and Individual Differences*, *45*(6), 559-564.

Rahmani, P. (2011). The relationship between self-esteem, achievement goals and academic achievement among the primary school students. *Procedia-Social and Behavioral Sciences*, *29*, 803-808

Robins, R. W., & Trzesniewski, K. H. (2005). Self-esteem development across the lifespan. *Current Directions in Psychological Science*, *14*(3), 158-162.

Sarıer, Y. (2016). Türkiye'de öğrencilerin akademik başarısını etkileyen faktörler: bir meta-analiz çalışması. [The factors that affects students' academic achievement in Turkey: A meta-analysis study]. *Hacettepe Üniversitesi Eğitim Fakültesi Dergi*si [Hacettepe University Journal of Education], *31* (3), s.609-628.

Savaşır I, & Şahin N (1995). *Wechsler Çocuklar İçin Zeka Ölçeği (WISC-R)* [Wechsler Intelligence Scale for Children-Revised-WISC-R]. Ankara: Türk Psikologlar Derneği.

Seçer, İ., İlbay, A. B., Ay, İ., & Çiftçi, M. (2012). Yatılı ilköğretim bölge okullarındaki öğrencilerin benlik saygılarının incelenmesi. [Investigating the self-esteem of

elemantary boarding scholls' students], *Sakarya University Journal of Education*, *1*(3), 61-73.

Shaffer, D. (2009). *Social and personality development.* Cengage Learning. New York.

Stoeger, H., Steinbach, J., Obergriesser, S., & Matthes, B. (2014). What is more important for fourth-grade primary school students for transforming their potential into achievement: the individual or the environmental box in multidimensional conceptions of giftedness?. *High Ability Studies*, *25*(1), 5-21.

Strassburger, L. A., Rosen, L. A., Miller, C. D., & Chavez, E. L. (1990). Hispanic-Anglo differences in academic achievement: The relationship of self-esteem, locus of control and socioeconomic level with grade-point average in the USA. *School Psychology International*, *11*(2), 119-124.

Şad, S.N. (2012). Investigation of parental ınvolvement tasks as predictors of primary students' Turkish, Math, and science and technology achievement. *Eurasian Journal of Educational Research*, *49*, 173-196.

Şahin, İ. (2007). Yeni ilköğretim 1. Kademe Türkçe programının değerlendirilmesi [Assessment of new Turkish curriculum for grade 1 to 5], *İlköğretim Online* [Elementary Education Online], 6 (2), 284-304.

Voyer, D., & Voyer, S. D. (2014). Gender differences in scholastic achievement: A meta-analysis. *Psychological Bulletin*, *140*(4), 1174- 1204.

Watkins, M. W., Lei, P., & Canivez, G. L. (2007). Psychometric intelligence and achievement: A cross-lagged panel analysis. *Intelligence*, *35*, 59-68.

Yavuzer, H. (2016). *Çocuk Psikolojisi* [Child Psychology], İstanbul: Remzi Kitabevi.

Yaylacı, G. Ö. (2007). İlköğretim düzeyinde kariyer eğitimi ve danışmanlığı [Career education and counseling in the development of children in elementary schools]. *Türk Dünyası Sosyal Bilimler Dergisi-Bilig* [Journal of Social Sciences of the Turkish World], *40*, 119-140.

Yelgün, A., ve Karaman, İ. (2015). Düşük sosyoekonomik düzeydeki mahallede bulunan bir ilköğretim okulunda akademik başarıyı düşüren faktörler nelerdir? [What are the factors reducing the academic achievement in a primary school located in a neighborhood with a low socioeconomic status?], *Eğitim ve Bilim* [Education and Science], *40*(179), 251-268.

Yeşilyaprak, B. (2007). *İlköğretimde gelişimsel rehberlik* [Developmental guidance in elementary school]. İstanbul: Morpa Yayınları.

Yılmaz, E., Yiğit, R. & Kaşarcı, İ. (2012). İlköğretim öğrencilerinin özyeterlilik düzeylerinin akademik başarı ve bazı değişkinler açısından incelenmesi [A study on self-efficacy levels of primary education students in terms of academic success and some variables], *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi* [Mehmet Akif Ersoy University Journal of Faculty of Education], *12* (23), s. 371-388.

Yılmaz, E., Yiğit, R. & Yurt, E. (2012). İlköğretim ikinci kademede öğrenim görmekte olan öğrencilerin genel benlik saygılarının öğrenci başarısı ve bazı değişkenler açısından incelemesi [A study on general self-esteem of primary school second-level students with respect to student success and some variables], *Erzincan Üniversitesi Eğitim Fakültesi Dergisi,* [Erzincan University Journal of Education Faculty], *14*(1), 197-213.

Yılmaz, M. T. (2013) Ben Kimim?. [Who am I?], *Eleştirel Pedagoji* [Critical Pedagogy], *27*, 28-37.

Yücel, Z. & Koç, M. (2011). İlköğretim öğrencilerinin matematik dersine karşı tutumlarının başarı düzeylerini yordama gücü ile cinsiyet arasındaki ilişki. [The relationship between the prediction level of elementary school students' math achievement by their math attitudes and gender], *İlköğretim Online*, [Elementary Education Online], *10*(1), 133-143.

Zuffianò, A., Alessandri, G., Gerbino, M., Kanacri, B. P. L., Di Giunta, L., Milioni, M., & Caprara, G. V. (2013). Academic achievement: The unique contribution of self-efficacy beliefs in self-regulated learning beyond intelligence, personality traits, and self-esteem. *Learning and Individual Differences*, *23*, 158-162.